The composite molding apparatus includes a rigid base member and a complementary semi-rigid mold member or "black bag" caul plate having a sieve member formed therein. The sieve member layer of the semi-rigid mold member engages pins which extend from the sandwich core to limit penetration into the semi-rigid mold member to a predetermined depth. The semi-rigid mold member is supported relative to the rigid mold member by the pins to provide uniform pressure transfer to the composite article during a high pressure cocure molding process without crushing the sandwich core.

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